

**SPIDER (ARACHNIDA: ARANAEAE) FAUNA OF DELHI
WITH FIRST REPORT OF COBWEB SPIDER *Argyrodes bonadea*
(Karsch, 1881) FROM INDIA**

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ABSTRACT

The present study deals with spider inventory in Delhi carried out from 2012 to 2015. During the study 26 species of spiders belonging to 26 genera and 12 families were added to the existing spider fauna of Delhi. After the present study, the spider fauna of Delhi comprises a total of 51 species belonging to 41 genera and 15 families. Among these, species richness was found to be highest for family Araneidae (13 spp.) followed by Salticidae (9 spp.), and Lycosidae (6 spp.). One species of a cobweb spider *Argyrodes bonadea* (Karsch, 1881) was first time reported from India and taxonomic description of the species is provided here. This paper also gives information about distribution of spiders so far reported from Delhi.

INTRODUCTION

Spiders (Phylum: Arthropoda; Class: Arachnida; Order: Araneae) represent one of the most heterogeneous faunal groups after insects. They are represented by a total of 45,819 species belonging to 3977 genera and 114 families worldwide (WCS, 2016). Of these, over 1700 species and about 450 genera in 61 families are reported from India (WCS, 2016).

Species inventory is one of the prime necessities for preparation of biodiversity conservation action plan for any region. Delhi being the National Capital of India is not an exception. Delhi represents one of the unique urban habitats and one of the few metros in the world that possesses a city forest, the Delhi Ridge at the bank of river Yamuna. The ridge and its forest, is the tail end of Aravalli hills - one of the oldest mountain system in the world and Delhi's oldest natural heritage. Though spiders are one of the diverse and functionally important predators regulating insect pests and mosquitoes in urban habitats (Coddington and Levi, 1991; Nyffeler, 2000) and indicators of ecological health (New, 1999; Hodge and Vink, 2000), studies on spiders are highly neglected in this region. So far only 25 species belonging to 19 genera and 8 families are reported from Delhi (Biswas and Biswas, 1997; Das and Singh 2012; Vidhel *et al.* 2015). The present study aims to document this faunal group in Delhi region based on random sampling carried out from 2012 to 2015.

MATERIALS AND METHODS

Random surveys were carried out during morning hours (6 hours to 9 hours) and evening time (16 hours to 18 hours). Through visual encounter search spiders were collected in different possible microhabitats, under rocks, fallen trees and logs, in leaf litter, in canopy, on bark and on ground. Spiders were examined in the field, photographed and released back in their natural

habitat after identification. Specimens which could not be identified in the field were collected in collection vials, preserved in 70% alcohol with little glycerin and later identified examining under microscope. Measurements of body parts were taken with an eye ocular meter. Leg measurements were taken dorsally for the left side. All measurements are in millimetres. Genitalia were dissected and cleared in concentrated lactic acid in 100°C water bath for 15-20 minutes. All illustrations were prepared with the help of a drawing attachment attached to an Olympus SZX10 stereomicroscope. All specimens are deposited at IPUM, New Delhi, India.

Abbreviations: IPUM: Indraprastha University Museum, AER - anterior eye row, AL - abdomen length, ALE - anterior lateral eye, AME - anterior median eye, AW - abdomen width, CL - cephalothorax length, CW - cephalothorax width, PER - posterior eye row, PME - posterior median eye, PLE - posterior lateral eye, TL - Total length.

RESULTS AND DISCUSSION

During the study, 26 species of spiders belonging to 26 genera and 12 families were added to the existing spider fauna of Delhi (Table 1). After the present study, the spider fauna of Delhi comprises a total of 51 species belonging to 41 genera and 15 families. Among these, species richness was found to be highest for family Araneidae (13 spp.) followed by Salticidae (9 spp.), and Lycosidae (6 spp.) (Fig. 1).

One interesting Cobweb spider, viz., *Argyrodes bonadea* (Karsch, 1881) (Fig. 2, Table 2) was recorded during the present study from Delhi which is first report of this species from India. Taxonomic details for the species is provided here.

Taxonomy

Family: Theridiidae Sundevall, 1833

Genus: *Argyrodes* Simon, 1864

Argyrodes bonadea (Karsch, 1881)

(Fig. 2; Table 2)

Conopistha bonadea

Walckenaeria anceps

Argyrodes bonadea hedini

Material examined:

2 females, IPU-Arach-25; IPU-Arach-60: IPU Campus, Dwarka, 01.09.2012, 06.03.2014, Coll. S. Malik.

Description:

Female: TL 2.60 - 4.30, CL 1.10 - 1.30, CW 0.70 - 0.90, AL 1.50 - 3.00, AW 1.15 - 2.50. Small sized and irregular-web building spiders.

Carapace: Carapace light brown, elongate and slightly darker at margins, 1.5 times as long as wide, slightly narrowed in eye area. Eight eyes in two rows, AER strongly recurved and PER nearly straight. Median ocular quadrangle wider in front than behind. Eyes inter-distance: AME-AME 0.04, ALE-ALE 0.40, PME-PME 0.10, PLE-PLE 0.40, AME-ALE 0.10, PME-PLE 0.14. Chelicerae small, promargin with three teeth and retromargin with one tooth. Labium reddish brown, lighter distally and wider than long. Maxillae reddish brown, longer than wide with truncated apices. Sternum dark brown, shield-shaped, widest at second coxae, slightly longer than wide. Legs dark

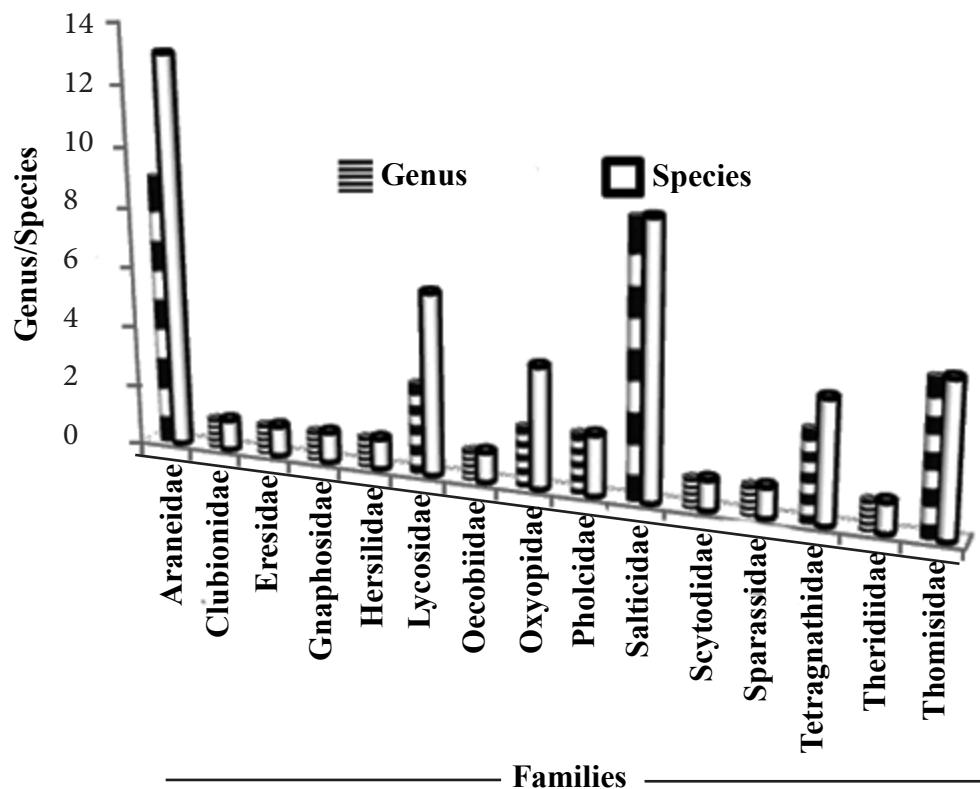


Figure - 1, Spider diversity of Delhi

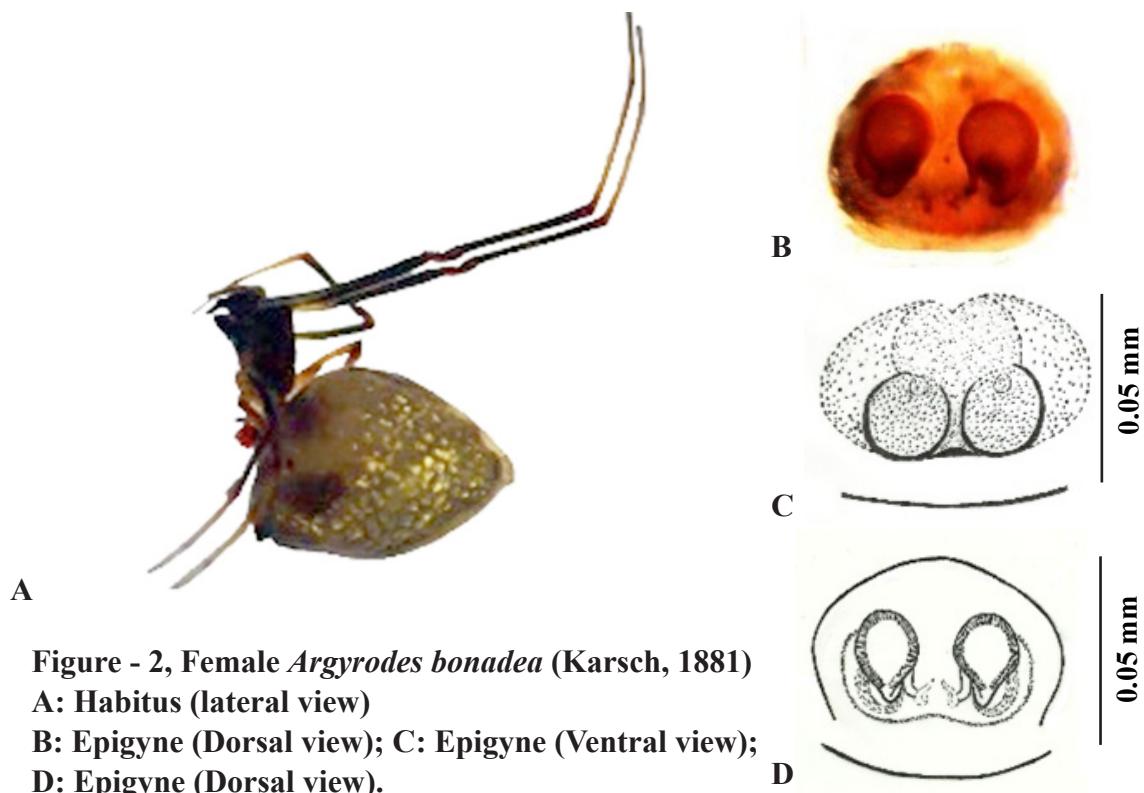


Figure - 2, Female *Argyrodes bonadea* (Karsch, 1881)

A: Habitus (lateral view)

B: Epigyne (Dorsal view); C: Epigyne (Ventral view);

D: Epigyne (Dorsal view).

Table 1. Spiders added to the spider fauna of Delhi

FAMILY	GENUS/SPECIES	M/F/J	LOCALITY
Araneidae Clerck, 1757	<i>Araneus mitificus</i> (Simon, 1886)	F	Dwarka
	<i>Cyclosa hexatuberculata</i> Tikader, 1982	F	Dwarka
	<i>Eriovixia excelsa</i> (Simon, 1889)	F	Dwarka, Asola Bhatti
	<i>Gasteracantha</i> sp.	J	Asola Bhatti
	<i>Gibbaranea bituberculata</i> (Walckenaer, 1802)	F	Dwarka
	<i>Larinia chloris</i> (Audouin, 1826)	F	Dwarka
	<i>Neoscona vigilans</i> (Blackwall, 1865)	F	Dwarka
Clubionidae Wagner, 1887	<i>Clubiona drassodes</i> O. Pickard-Cambridge, 1874	F	Dwarka, Ghari Mandu
Eresidae C. L. Koch, 1845	<i>Stegodyphus pacificus</i> Pocock, 1900	F	Dwarka
Hersiliidae Thorell, 1870	<i>Hersilia savignyi</i> Lucas, 1836	F	Dwarka, Rajouri Garden, Garhi Mandu, Asola Bhatti
Lycosidae Sundevall, 1833	<i>Hippasa lycosina</i> Pocock, 1900	F	Dwarka
	<i>Lycosa iranii</i> Pocock, 1901	F	Dwarka
	<i>Pardosa birmanica</i> Simon, 1884	F	Dwarka
Oecobiidae Blackwall, 1862	<i>Oecobius</i> sp	J	Rajouri Garden
Oxyopidae Thorell, 1870	<i>Oxyopes bharatae</i> Gajbe, 1999	M, F	Dwarka, Garhi Mandu
	<i>Peucetia akwadaensis</i> Patel, 1978	M, F	Dwarka, Garhi Mandu
Salticidae Blackwall, 1841	<i>Harmochirus brachiatus</i> (Thorell, 1877)	M	Dwarka, Garhi Mandu
	<i>Pseudicius ludhianaensis</i> (Tikader, 1974)	F	Dwarka, Garhi Mandu, Asola Bhatti
	<i>Thyene imperialis</i> (Rossi, 1846)	M, F	Dwarka, Garhi Mandu, Asola Bhatti
	<i>Scytodes</i> sp.	F	Dwarka
Sparassidae Bertkau, 1872	<i>Olios tener</i> (Thorell, 1891)	F	Dwarka
Theridiidae Sundevall, 1833	<i>Argyrodes bonadea</i> (Karsch, 1881)	F	Dwarka
Thomisidae Sundevall, 1833	<i>Camaricus formosus</i> Thorell, 1887	F	Dwarka
	<i>Monaeses parvati</i> Tikader, 1963	F	Dwarka
	<i>Oxytate elongate</i> (Tikader, 1980)	F	Dwarka
	<i>Thomisus andamanensis</i> Tikader, 1980	M, F	Garhi Mandu, Dwarka

Table 2. Morphometry of legs of female *Argyrodes bonadea* (Karsch, 1881).

	Leg I	Leg II	Leg III	Leg IV	Palp
Femur	1.70-2.00	1.00-1.20	0.50-0.80	1.00-1.30	0.10-0.20
Patella	0.10-0.30	0.10-0.20	0.05-0.10	0.10-0.20	0.02-0.05
Tibia	1.50-1.80	0.70-0.90	0.35-0.50	0.65-0.80	0.05-0.10
Metatarsus	1.20-1.50	0.80-1.00	0.50-0.60	0.70-0.90	0.20-0.40
Tarsus	0.30-0.50	0.50-0.70	0.25-0.40	0.30-0.50	-
Total	4.80-6.10	3.10-4.00	1.65-2.40	2.75-3.70	0.37-0.75

brown, except tarsal and metatarsal region that is yellowish brown, leg formula 1243 (Table 2).

Abdomen: Spherical, 1.5 times as high as long. Abdomen silvery with a longitudinal median and a ventrolateral black band, subtriangular and mound-like in lateral view and about three times higher than cephalothorax. Colulus distinct and well developed between spinnerets.

Epigyne: Ventrally, shining reddish brown chitinous plate that covers spherical spermathecae. Dorsally, spermathecae nearly spherical, not overlapped and with indistinct stalks at bases, copulatory ducts short and almost straight, fertilization ducts bent and arise from the posterior margin of spermathecae (Fig. 2, B-D).

NATURAL HISTORY

The specimen was collected from leaf litters of woody vegetation adjacent to Najafgarh canal, Dwarka, Delhi.

DISTRIBUTION: India (present record), China, Korea, Taiwan, Japan, Philippines.

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